CLAIMS

1.   A liquid crystal display having a liquid crystal
cell of bend alignment mode and a pair of polarizing plates
5   provided on both sides of the cell, wherein at least one of
the polarizing plates comprises a polarizing membrane and
an optical compensatory film positioned nearer to the
liquid crystal cell than the polarizing membrane, said
optical compensatory film having at least two optically
10   anisotropic layers comprising first and second optically
anisotropic layers, said first optically anisotropic layer
being made from discotic compounds oriented in hybrid
alignment, said second optically anisotropic layer
consisting of a cellulose ester film, and said polarizing
15   membrane and said first and second optically anisotropic
layers being so placed that the first optically anisotropic
layer giving in plane the maximum refractive index in a
direction of essentially 45° to a transmission axis in
plane of the polarizing membrane, and that the second
20   optically anisotropic layer gives in plane the maximum
refractive index in a direction essentially parallel or
perpendicular to a transmission axis in plane of the
polarizing membrane, and wherein the liquid crystal cell of
bend alignment mode and the first and second optically
25   anisotropic layers have optical characters satisfying the
following formula (1) when measured at any wavelength of
450 nm, 550 nm and 630 nm:
     (1) $0.05 < (\Delta n \times d)/(Re1 \times Rth2) < 0.20$
in which Δn is an inherent birefringent index of rod-like
30   liquid crystal molecules in the liquid crystal cell; d is a
thickness of a liquid crystal layer in the liquid crystal
cell in terms of nm; Re1 is a retardation value in plane of
the first optically anisotropic layer; and Rth2 is a
retardation value along a thickness direction of the second
35   optically anisotropic layer.

2. The liquid crystal display as defined in claim 1, wherein the $\Delta n \times d$ satisfies the following formula (2) when measured at any wavelength of 450 nm, 550 nm and 630 nm:

(2)   100 nm < $\Delta n \times d$ < 1,500 nm.

3. The liquid crystal display as defined in claim 1, wherein the Re1 satisfies the following formula (3) when measured at any wavelength of 450 nm, 550 nm and 630 nm:

(3)   10 nm < Re1 < 50 nm.

4. The liquid crystal display as defined in claim 1, wherein the Rth2 satisfies the following formula (4) when measured at any wavelength of 450 nm, 550 nm and 630 nm:

(4)   70 nm < Rth2 < 400 nm.

5. The liquid crystal display as defined in claim 1, wherein the optical compensatory film gives retardation values Re(0°), Re(40°) and Re(-40°) at 546 nm in the ranges of 30±10 nm, 50±10 nm and 115±10 nm, respectively, and wherein Re(0°), Re(40°) and Re(-40°) stand for retardation values of the optical compensatory film when the retardation is measured, in a plane including the normal of the film and the direction giving in the film plane the minimum refractive index of the optical compensatory film, in the directions inclined at 0°, 40° and reversely 40° from the normal to the plane, respectively.

6. The liquid crystal display as defined in claim 5, wherein the direction giving in the film plane the minimum refractive index of the optical compensatory film is essentially at 45° to a longitudinal direction when the optical compensatory film is produced.

7.   The liquid crystal display as defined in claim 1,
wherein the optical compensatory film and the polarizing
membrane are laminated by attaching the film in the form of
a roll to the membrane in the form of a roll.

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8.   A liquid crystal display of reflection type
having a reflection board, a liquid crystal cell of hybrid
alignment mode and a polarizing plate in order, wherein the
polarizing plate comprises a polarizing membrane and an
5   optical compensatory film positioned nearer to the liquid
crystal cell than the polarizing membrane, said optical
compensatory sheet having at least two optically
anisotropic layers comprising first and second optically
anisotropic layers, said first optically anisotropic layer
10   being made from discotic compounds oriented in hybrid
alignment, said second optically anisotropic layer
consisting of a cellulose ester film, and said polarizing
membrane and said first and second optically anisotropic
layers being so placed that the first optically anisotropic
15   layer gives in plane the maximum refractive index in a
direction of essentially 45° to a transmission axis in
plane of the polarizing membrane, and that the second
optically anisotropic layer gives in plane the maximum
refractive index in a direction essentially parallel or
20   perpendicular to a transmission axis in plane of the
polarizing membrane, and wherein the liquid crystal cell of
hybrid alignment mode and the first and second optically
anisotropic layers have optical characters satisfying the
following formula (5) when measured at any wavelength of
25   450 nm, 550 nm and 630 nm:

(5) $0.025 < (\Delta n \times d)/(Re1 \times Rth2) < 0.10$

in which Δn is an inherent birefringent index of rod-like
liquid crystal molecules in the liquid crystal cell; d is a
thickness of a liquid crystal layer in the liquid crystal
30   cell in terms of nm; Re1 is a retardation value in plane of
the first optically anisotropic layer; and Rth2 is a
retardation value along a thickness direction of the second
optically anisotropic layer.

9.   The liquid crystal display as defined in claim 8, wherein the Δn×d satisfies the following formula (6) when measured at any wavelength of 450 nm, 550 nm and 630 nm:

(6)   50 nm < Δn×d < 750 nm.

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10.   The liquid crystal display as defined in claim 8, wherein the Re1 satisfies the following formula (7) when measured at any wavelength of 450 nm, 550 nm and 630 nm:

(7)   10 nm < Re1 < 50 nm.

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11.   The liquid crystal display as defined in claim 8, wherein the Rth2 satisfies the following formula (8) when measured at any wavelength of 450 nm, 550 nm and 630 nm:

(8)   70 nm < Rth2 < 400 nm.

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12.   The liquid crystal display as defined in claim 8, wherein the optical compensatory film gives retardation values Re(0°), Re(40°) and Re(-40°) at 546 nm in the ranges of 30±10 nm, 50±10 nm and 115±10 nm, respectively, and
20   wherein Re(0°), Re(40°) and Re(-40°) stand for retardation values of the optical compensatory film when the retardation is measured, in a plane including the normal of the film and the direction giving in the film plane the minimum refractive index of the optical compensatory film,
25   in the directions inclined at 0°, 40° and reversely 40° from the normal to the plane, respectively.

13.   The liquid crystal display as defined in claim 12, wherein the direction giving in the film plane the
30   minimum refractive index of the optical compensatory film is essentially at 45° to a longitudinal direction when the optical compensatory film is produced.

14. The liquid crystal display as defined in claim 8, wherein the optical compensatory film and the polarizing membrane are laminated by attaching the film in the form of a roll to the membrane in the form of a roll.

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15. A method for testing an optical compensatory film having a transparent support and an optically anisotropic layer made from liquid crystal compounds, which comprises the steps of: placing the optical compensatory

10 film between a pair of Glan-Thompson prisms, positioning the film and the prisms so that light-transmittance may be the least, and measuring the light-transmittance to confirm whether the value defined by the following formula is smaller than a predetermined value or not:

15       $100 \times (T-C)/(P-C)$

in which T is a light-transmittance measured where the optical compensatory film and the pair of Glan-Thompson prisms are positioned so that the light-transmittance may be the least; P is a light-transmittance measured where

20 only the Glan-Thompson prisms are placed in parallel Nicols arrangement; and C is a light-transmittance measured where only the Glan-Thompson prisms are placed in crossed Nicols arrangement.

25   16. The method as defined in claim 15, wherein the predetermined value is 0.005.

17. An apparatus for testing an optical compensatory
film having a transparent support and an optically
anisotropic layer formed from liquid crystal compounds,
which comprises a light source, a pair of Glan-Thompson
5 prisms, a holder with which the optical compensatory film
is kept and placed between the Glan-Thompson prisms, a
mechanism rotating the Glan-Thompson prisms independently
around the light path, and a light-receiver by which light
having been emitted from the light source and passed
10 through the optical compensatory film and the Glan-Thompson
prisms is detected and evaluated.

18 The apparatus as defined in claim 17, wherein
the apparatus further comprises another mechanism rotating
15 the optical compensatory film around the light path.